

Remarks/Arguments:

Applicant's undersigned attorney would like to thank Examiner Christopher Kim for the courtesy of extending a telephone interview on April 8, 2010. During the interview, as set forth in the Interview Summary mailed on April 13, 2010, Claim 10 and U.S. Patent No. 816,470 to Higgins were discussed. No agreement was reached, as the Examiner and Applicant disagree with regards to the interpretation of the Higgins reference regarding the two curved deflectors. However, the Examiner's position with regards to Higgins has been carefully studied and taken into consideration in preparing these amendments to the claims and associated arguments

Claims 7-11 have been amended. Support for the claim amendments may be found in the original Specification at page 3, lines 1-11; page 6, line 18 through page 7, line 3; Figures 7, 7a, 8a, 8b, 9, and 10; and in original Claims 9 and 10. No new matter has been introduced with these amendments.

Reconsideration of the application is respectfully requested.

Section 112 Rejections

In paragraph 5 of the Office Action, Claims 5-11 and 25 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 7 and 8 have been amended to remove "cross member" and recite the phrase "elongate head pipe." Claim 10 has been amended to recite the phrase "elongate head pipe" instead of using the term "head" throughout the claims.

The Examiner stated that in claim 10 "the limitation 'a pipe' in line 3" . . . appears to be a double inclusion of the 'elongate head pipe' recited in line 2." (p. 3, Office Action dated January 14, 2010). Claim 10 clearly recites the leg of the T-piece having a pipe defining a liquid passageway. Claim 10, as amended, specifically recites the elongated head pipe in all instances

referencing to the elongate head pipe section of the T-piece. Thus, Claim 10 clearly identifies the elongated head pipe and the leg of the T-piece, and the meaning of "a pipe" in Claim 10 line 3 is not indefinite.

Applicant respectfully submits that with the amendments presented herein, the Section 112 rejections are obviated.

Reconsideration and withdrawal of the Section 112 rejections are respectfully requested.

Section 102/103 Rejections

Claims 5-7, 10-11 and 25 were rejected under 35 U.S.C. § 102(b) and Claim 8 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 816,470 to Higgins (hereinafter "Higgins"). In view of the amendments and arguments presented herein, Applicant respectfully traverses.

Claim 9, has been amended to be placed in independent form. As the Examiner has not rejected Claim 9 under 35 U.S.C. §§ 102 or 103, and as the § 112 rejection has been addressed above, it is respectfully submitted that amended Claim 9 is directed to patentable subject matter. Favorable action is respectfully requested.

Claim 10, as amended, is directed to a nozzle for producing a flat spray pattern. The nozzle includes a T-piece having a leg and an elongate head pipe.

Claim 10 has been amended to more fully describe the present invention. Specifically, Claim 10 has been amended to state that the elongate head pipe of the T-piece is a smooth bore pipe positioned across the end of the liquid passageway with an aperture of fixed cross sectional area positioned in the elongate head pipe of the T-piece aligned with the liquid passageway. Claim 10 has further been amended to state that the elongate head pipe includes two pins terminating in a planar end face perpendicular to the longitudinal axis of the elongate head pipe.

It is submitted that Applicant's claimed invention is patentable over the reference to Higgins, in that Higgins fails to disclose, teach, or suggest the following: a nozzle producing a flat spray pattern that is parallel to the longitudinal axis of the elongate head pipe, not perpendicular to it; two pins of the T-piece each having a planar end face perpendicular to the longitudinal axis of the elongate head pipe; and an elongate head pipe having a smooth bore, indicating that the two curved deflectors are not threaded.

Applicant's Invention

Figures A and B (below) are illustrations of Applicant's invention. Figures A and B show the nozzle including a T-piece 11 having a leg 12 and an elongate head pipe 15. The elongate head pipe 15 includes a circular aperture 20 and two pins 21, 22 each having a planar end face 23, as described in Claim 10 herein.

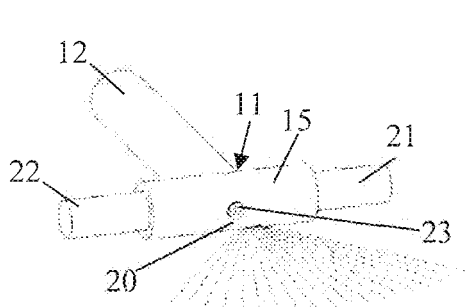


FIGURE A

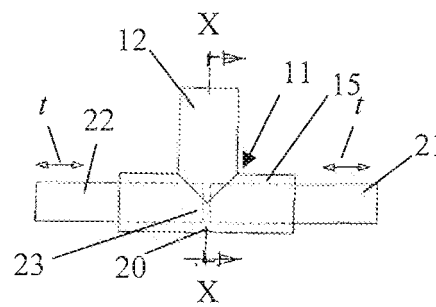


FIGURE B

As shown in Figures A and B, the pins 21, 22 slide in the elongate head pipe 15 of the T-piece 11, which has a smooth bore. The curved surfaces defined by the bore of the elongate head pipe 15 define the curved deflectors that produce the flat plume or flat spray pattern, shown in Figure A.

Figures C and D (below) provide a cross section view of sections X – X of Figure B with two variations of the T-piece. Figures C and D show the curved deflectors of the elongate head pipe 15 that causes the water or liquid in the T-piece 11 to converge towards the circular opening 20, producing the flat spray pattern (Figure A) that is parallel to the longitudinal axis of the

elongate head pipe 15 (arrows *t*, Figure B). The planar end face 23 of each of the pins 21, 22 (Figure B) is perpendicular to the axis of the elongate head pipe 15. As a result, if the planar end faces 23 of the pins 21, 22 were brought into abutting contact liquid flow would cease.

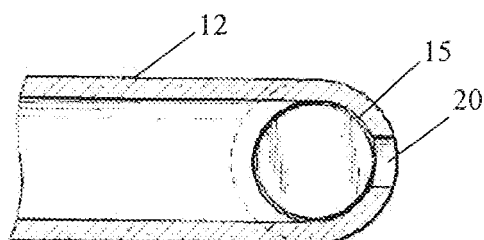


FIGURE C

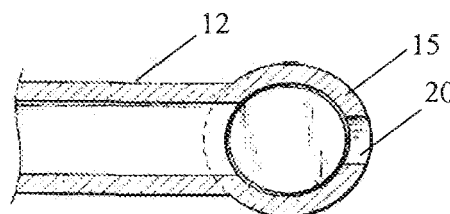


FIGURE D

The Higgins Disclosure

Having further studied the Higgins reference, in view of the Examiner's comments, Applicant's position is that Higgins discloses the following structure, which operates in the following manner. Applicant refers to the following drawings as Applicant's interpretation of the Higgins disclosure.

Higgins relates to a nozzle for spraying an oil and steam mixture. (Higgins, page 1, lines 40-52). Figure E (below) shows the nozzle 5 of Higgins having two screw-threaded apertures 9 with two oppositely-disposed screw-threaded plugs 10, 11. (Higgins, page 1, lines 57-63). Although a front view of Higgins is not provided, it is contended that the slot opening must be an elongate slot running perpendicular to the axis of the screw-threaded apertures 9 portion of the nozzle 5. Due to the configuration of the screw-threaded plugs 10, 11 and the discharge passages 13, 14 shown in Figures 3 and 4, respectively, of Higgins, the slot opening needs to be quite large to accommodate the four circular apertures (circular discharge passages 13, Figure 3) or elongated slot (elongated discharge passage 14, Figure 4) in the plug 10.

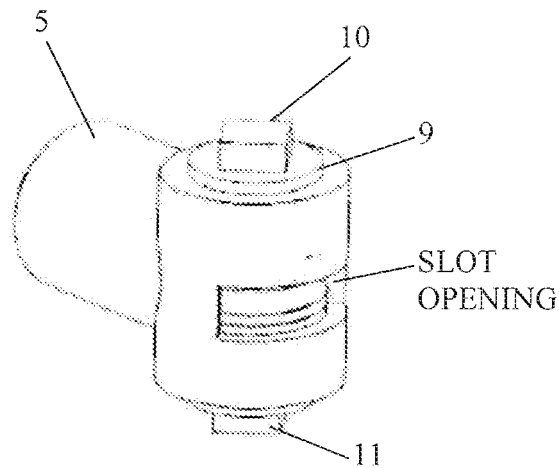


FIGURE E

With regards to the Figure 3 embodiment of Higgins, the nozzle 5 of Higgins provides for screw-threaded plugs 10, 11 having discharge passages 13. Figures F-G (below) show the nozzle 5 with the circular discharge passages 13, and Figure H (below) shows the cross-section of portions Y – Y of the nozzle 5. Figure F shows the screw-threaded plugs 10, 11 partially screwed into place with the circular discharge passages 13 on screw-threaded plug 10. Figure G shows the circular discharge passages 13 fully screwed into place with the screw-threaded plugs 10 and 11 contacting one another. Note that the nozzle 5 is configured to be used when the screw-threaded plugs 10, 11 contact one another, which would push the liquid through the circular discharge passages 13.

Figure H shows a cross section of the Y – Y section of Figure G. This cross-section shows how the screw-threaded plugs 10, 11 determine the shape of the nozzle 5 surrounding the slot opening. Hence, the shape of the outgoing liquid is dictated by the shape of the screw-threaded plugs 10, 11 and the holes in the screw-threaded plug 10. Thus, in Higgins, liquid would flow out of the nozzle 5 in a pattern determined by the circular discharge passages 13, opposed to a flat pattern produced by the two curved deflectors defined by the smooth bore of the elongate head pipe of Applicant's invention.

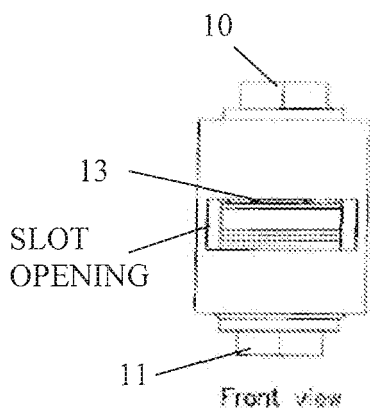


FIGURE F

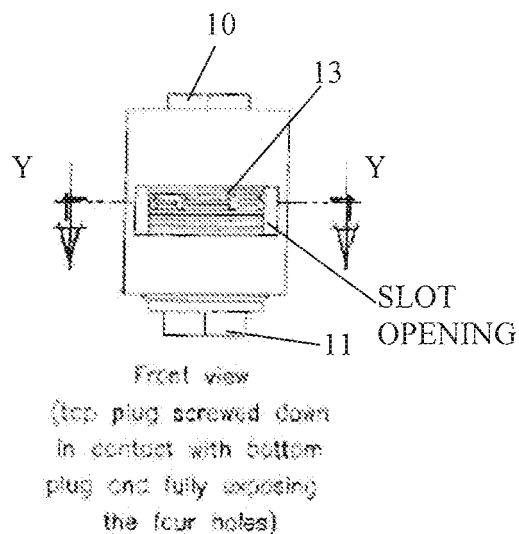


FIGURE G

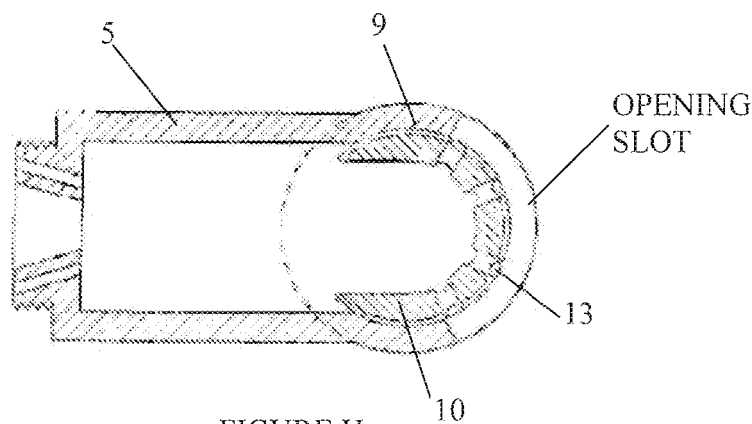


FIGURE H

Figure I (below) shows the screw-threaded plug 11 having a flat surface that contacts the screw-threaded plug 10 having the circular discharge passages 13. Figure J (below) shows the circular discharge passages 13 such that the areas surrounding the discharge passages 13 of the screw-threaded plug 10 are curved. Figures I-J further illustrate how Applicant's invention is distinct from Higgins, in that Higgins uses the screw-threaded plugs 10, 11 to determine the spray pattern. To the contrary, Applicant's invention uses the curved deflectors created by the elongate head pipe 15 to produce a flat spray pattern and only uses the pins 21, 22 to control the amount of liquid flowing out of the circular aperture 20.

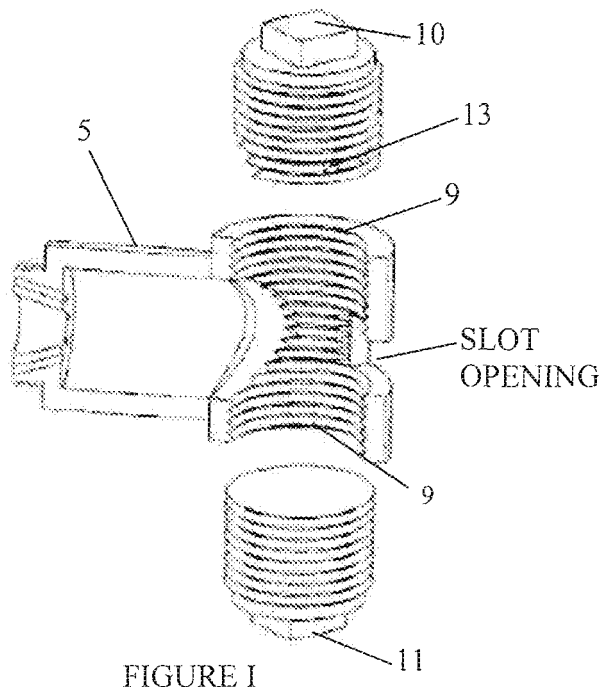


FIGURE I

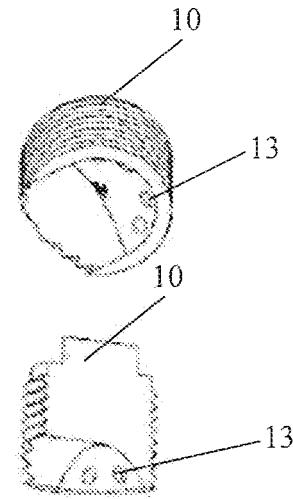


FIGURE J

With respect to the Figure 4 embodiment of Higgins, Figures K-L (below) show the nozzle 5 with the elongated discharge passages 14, and Figure M (below) shows the cross-section of portions Z – Z of the nozzle 5. Similar to Figures F-H (above), Figures K-M show images of how Higgins works with the elongated discharge passage 14. Figure K shows the screw-threaded plugs 10, 11 being screwed into place with the elongated discharge passage 14 on the screw-threaded plug 10. Figure L shows the elongated discharge passage 14 fully screwed into place with the screw-threaded plugs 10 and 11 contacting one another. Note that the nozzle 5 is configured to be used when the screw-threaded plugs 10, 11 are contacting one another, which would push the liquid through the elongated discharge passage 14.

The figures below show how the screw-threaded plugs 10, 11 define the spray pattern. Thus, in Higgins liquid would flow out of the nozzle 5 in a pattern determined by the elongated discharge passage 14, as opposed to a flat spray pattern (Figure A) produced by the two curved deflectors of Applicant's invention.

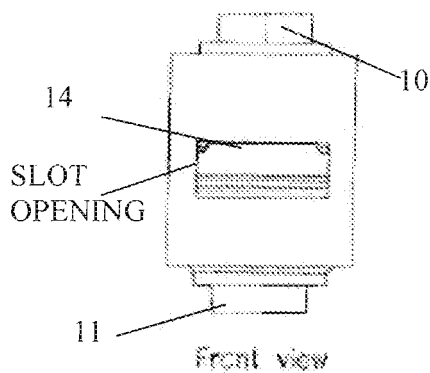


FIGURE K

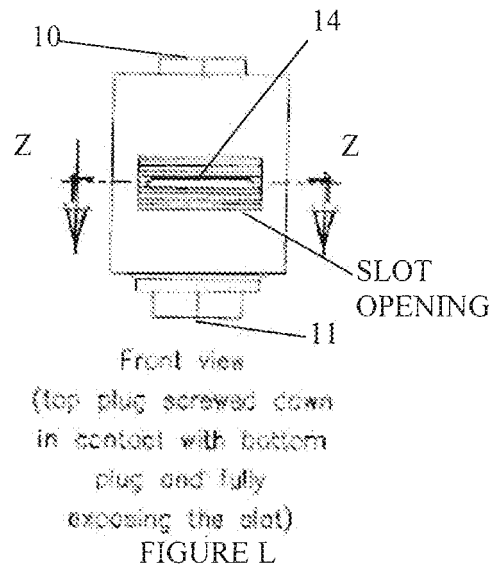


FIGURE L

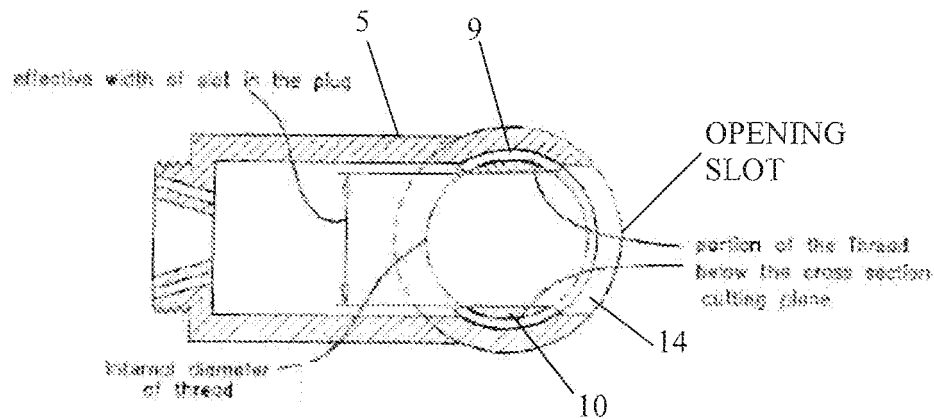


FIGURE M

Figure N (below) shows the screw-threaded plug 11 having a flat surface that contacts the screw-threaded plug 10 having the elongated discharge passage 14. Figure O (below) shows the elongated discharge passage 14, such that, the areas surrounding the elongated discharge passage 14 are curved to create the elongated slot.

Similar to Figures I and J discussed above, Figures N-O further illustrate how Applicant's invention is distinct from Higgins, in that Higgins uses the screw-threaded plugs 10, 11 to determine the spray pattern. To the contrary, Applicant's invention uses the curved deflectors created by the elongate head pipe 15 (Figures C-D) to produce a flat spray pattern and only uses

the pins 21, 22 to control the amount of liquid flowing out of the circular aperture 20.

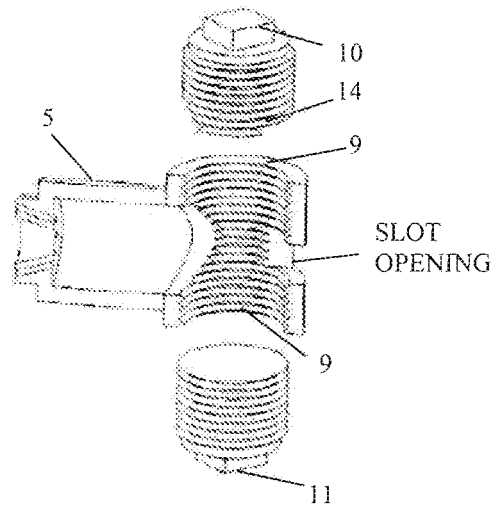


FIGURE N

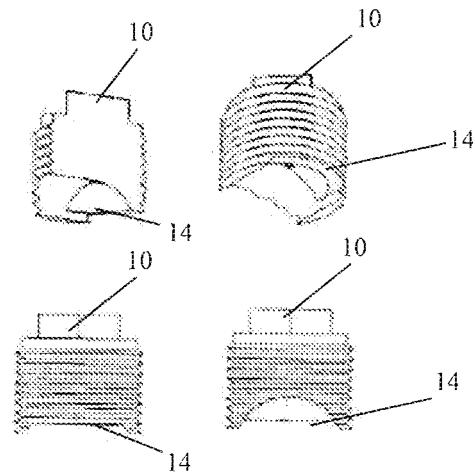


FIGURE O

Applicant's Claimed Invention is Patentably Distinct from Higgins

As illustrated above in Figure A, it is clear that the nozzle of Applicant's invention is configured such that the plane of the spray pattern would be parallel to the longitudinal axis of the elongate head pipe. It is also clear that the nozzle 5 of Higgins produces a spray pattern that is parallel to the slot opening, which the discharge plugs are aligned with. Hence, as shown in Figures P-Q (below), the spray pattern of Higgins is perpendicular to the longitudinal axis (arrows ℓ) of the screw-threaded apertures 9 (i.e., the "elongate head pipe"). Therefore, Higgins fails to provide a nozzle having a spray pattern parallel to the longitudinal axis of the elongate head pipe 15 (Figure A), as provided in Applicant's invention.

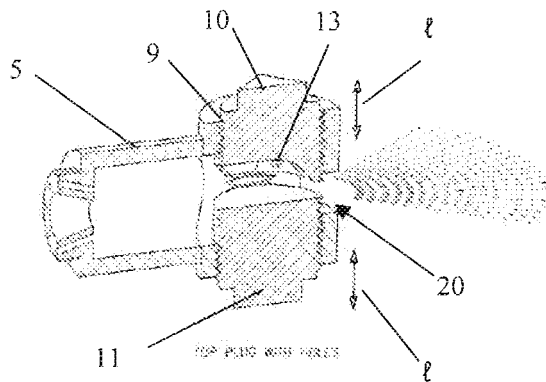


FIGURE P

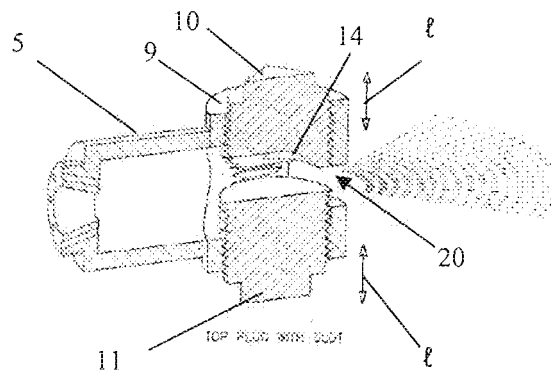


FIGURE Q

Furthermore, Higgins fails to disclose an elongate head pipe 15 having a smooth bore to create two curved deflectors that are smooth. To the contrary, Higgins provides two screw-threaded apertures 9 that are threaded and not smooth. The screw-threaded apertures of Higgins receive two screw-threaded plugs 10, 11, such that, when the two screw-threaded plugs 10, 11 are in contact, the screw-threaded plugs 10, 11 dictate the shape of the spray pattern. Applicant's invention provides for the elongate head pipe 15 that uses two pins 21, 22, each having a planar end face, to vary the cross-sectional area of the circular opening 20. The shape of the spray pattern produced by Applicant's invention is determined by the smooth bore that creates the two curved deflectors of the head pipe 15, not the two pins 21, 22. This implies that the flat spray pattern is only produced when the pins 21, 22 are not in contact, since contact would prevent the flow of liquid through the circular opening 20. Therefore, Higgins does not disclose Applicant's invention since the configuration of Higgins, includes screw-threaded plugs 10, 11 and screw-threaded apertures 9. Higgins does not provide smooth bores that are configured to provide the curved deflectors, as claimed in Applicant's invention.

Moreover, Higgins fails to disclose Applicant's invention in that, Higgins fails to provide two pins 21, 22 having a planar end face 23. As discuss above, the pins 21, 22 work in combination with the curved deflectors to create the flat spray pattern (Figure A). Additionally, as described above, Higgins uses one screw-threaded plug 10 with a curved surface, i.e., the area surrounding the circular or elongated discharge passage(s) 13, 14. Applicant's invention provides for two pins 21, 22 each having a planar end face 23 that in combination with the curve

deflectors of the elongated head pipe 15 produce a flat spray pattern. As such, Higgins fails to disclose two pins 21, 22 each having a planar end face 23, as set forth in Applicant's claimed invention.

Since Higgins uses the end faces of the plugs, which define discharge passages 13, 14, to create the spray pattern, it would not be obvious to use the bore of the elongate head pipe, which is threaded, to create a spray pattern. Moreover, since the engagement of the end faces of the screw-threaded plugs of Higgins, which extend through the elongate head pipe, discharge a spray pattern perpendicular to the longitudinal axis of the elongate head pipe, it would not be possible to discharge a spray pattern which is parallel thereto. Thus, Applicant's invention is non-obvious over Higgins.

Accordingly, Higgins fails to disclose, teach or suggest the present invention. Thus, independent Claims 9 and 10 and Claims 5-8, 11, and 25, which depend therefrom, are patentable over Higgins.

Reconsideration and withdrawal of the rejection of the claims under Sections 102(b) and 103(a) are respectfully requested.

Summary

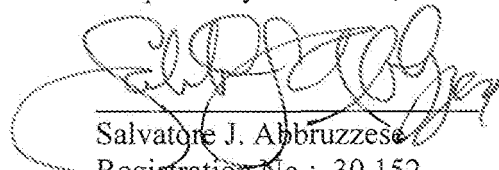
Therefore, Applicant respectfully submits that independent Claims 9 and 10, and all claims dependent therefrom, are patentably distinct. Further, rejoinder and allowance of Claims 12 and 14-22 are respectfully requested. This application is believed to be in condition for allowance. Favorable action thereon is therefore respectfully solicited.

Should the Examiner have any questions or comments concerning the above, the Examiner is respectfully invited to contact the undersigned attorney at the telephone number given below.

Application No: 10/550,769
Response to Final Office Action dated January 14, 2010
Amendment and Response dated July 14, 2010
Attorney Docket: 1557-4 PCT/US/RCE II
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The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or credit any overpayment, to Deposit Account No. 08-2461. Such authorization includes authorization to charge fees for extensions of time, if any, under 37 C.F.R. § 1.17 and also should be treated as a constructive petition for an extension of time in this reply or any future reply pursuant to 37 C.F.R. § 1.136.

Respectfully submitted,



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